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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/781,166

02/18/2004

Richard W. Foote

P05810

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10/18/2006

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DALLAS, TX 75380

EXAMINER

NGUYEN, TUAN H

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

10/781,166

Applicant(s)

FOOTE, RICHARD W.

Examiner

Tuan H. Nguyen

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 21-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 21-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 36 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

“ the first doped oxide layer has an etch rate that is at least four hundred times slower than an etch rate of the second doped oxide layer” as recited in newly added claim 36, is not supported by the instant specification.

This is a new matter rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10, 21-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Background of the invention in view of Haskell et al. (US 5,116,778).

Background of the invention, fig. 1 and related text on pages 1-3 discloses the conventional method for forming a thin layer of oxide of about 5000 Angstroms over the metal link layer 120 of the laser trimmed fuse with the use of a masked partial etch-back of the passivation layers of oxide 130 and nitride 140 over the final layer of metal 120.

Background of the invention fails to teach the use of a (boron) doped oxide layer having a slower etch rate as an etch stop over the final metal layer, and a (phosphorus) doped oxide layer having a faster etch rate over the boron doped oxide layer so that the phosphorus doped oxide layer could be firmly removed without further etching into the boron doped oxide layer, preserving the uniform thickness in the boron doped oxide layer over the final metal layer.

Haskell, particularly figs. 1-3 and text on col. 2, last paragraph to col. 3, fourth paragraph, teaches the use of BSG layer 16 as an etch stop in the process of wet etching PSG layer 18. Note on col. 4, lines 11-18 for teaching the etch rate vs. time, the time required for etching from dividing the thickness by a value of etch rate is inherently calculated in order to stop process from further etching into the lower BSG layer 16 that has a slower etch rate than the PSG layer 18.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have replaced nitride/oxide layers from the conventional process of providing a uniform oxide layer over a metal links layer of a laser trimmed fuse with PSG/BSG layers as suggested by Haskell et al. since PSG/BSG layers would provide a

higher etch selectivity, use as an etch stop film to provide an insulating film with a constant thickness, improve the process yield and reliability.

With respect to claims 7, 9, 10, 24, 31, 35, the thicknesses of first and second layers, and a further step of etching down to a desired thickness of the layer of boron doped oxide in order to obtain an oxide layer having a thickness of 5000 angstroms over the metal link is considered to involve routine optimization while has been held to be within the level of ordinary skill in the art, as noted In Re Aller 105 USPQ233, 255 (CCPA 1955). Therefore, one of ordinary skill in the requisite art at the time the invention was made would have formed layer with a suitable thickness range in the method for forming oxide layer over the metal link layer in order to optimize the result.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kim teaches the use of doped oxide that has a higher etch rate than that of the insulating film 25 in a process of etching to form a film having a constant thickness.

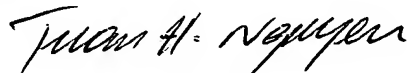
Response to Arguments

Applicant's arguments with respect to claims 1-10, 21-36 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan H. Nguyen whose telephone number is 571-272-1694. The examiner can normally be reached on 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tuan H. Nguyen
Primary Examiner
Art Unit 2813